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## **Coronary arteritis as a cause of cardiac rhythm disorders**

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### **Abstract**

Ischemic heart disease is a unit consisting of all heart ischemic states regardless of their pathomechanism. Despite common knowledge about risk factors, it remains the most frequent cause of death in industrialized countries.

Aim of this paper is to present a case of 23-year-old patient hospitalized in the Department of Internal Diseases because of sensation of heart palpitation and weakness due to acute coronary syndrome in course of coronary arteritis, which occurred 7 years earlier. After performing 24-hour cardiac rhythm observation using Holter monitor, episodes of atrioventricular block Mobitz II, sinoatrial block and multiple supraventricular and ventricular excitations were found.

**Key words:** coronary arteritis, myocardial infarction.

## **Introduction**

More than 98% of acute coronary syndrome cases are caused by atherosclerosis affecting the coronary arteries while inflammatory processes in course of autoimmune disorders or infection of *Chlamydia pneumoniae*, Cytomegalovirus, Herpes simplex and *Helicobacter pylori* are rarely observed as a cause of this disease. Young patients may also experience coronary syndrome due to muscular bridge pressing on the artery and impairing the blood flow. Regardless of etiology consequences of ischemia may be health and life threatening. Diagnostic procedure in case of recurrent chest pain includes medical imaging, such as multi-slice computed tomography, and coronarography.

## **Case report**

23-year-old patient was admitted to the department because of stabbing pain in the chest and episodes of heart palpitation sensation. Patient stated that he was not addicted to alcohol or smoking. About 7 years ago he had an episode of acute heart ischemia, which occurred after chronic infection of paranasal sinuses and resection of cyst in the maxillary sinus. In that time patient suffered from strong, tearing pain in the chest, he had difficulties with breathing. Laboratory tests showed troponin level indicating acute heart ischemia. Coronarography led to the diagnosis of coronary arteritis. Performed microbiological tests in search for *Cytomegalovirus*, *Chlamydia pneumoniae*, hepatotropic virus and standard blood culture showed no bacterial or viral infection. After this event patient had been under constant cardiologic care and he had not been experiencing any disturbing symptoms. Echocardiography revealed systolic disorders in parabasal part of intraventricular septum, left ventricle ejection fraction was 60%. X-ray did not show any abnormalities. Electrocardiography at rest was normal. 24 hour Holter monitoring showed episodes of second degree atrioventricular block, sinoatrial block and many supraventricular and ventricular excitations, which occurred mainly at night. Because of these abnormalities patient was to have coronary arteries multi-scan computed tomography performed in order to qualify him for stimulator implantation.

## **Discussion**

Coronary arteritis is known to cause acute ischemic state. From the clinical as well as pathophysiological point of view, vasculitis includes a group of various diseases which are characterized by accumulation of inflammatory cells within vessels walls [1]. Vasculitis in course of immune disorders, such as this observed in Churg-Strauss syndrome, is considered to constitute another group of these diseases. Allergic granulomatosis, known as Churg-Strauss syndrome, occurs in young patients (most frequently at the age of 16-30 years). It is characterized by typical vasculitis symptoms as well as signs of asthma, allergic rhinitis and recurrent sinusitis [2]. Inflammatory state of the nasal cavity and the sinuses is observed in more than 70% of the patients [2]. Nasal polyps are found in most of the cases. Course of the disease resembles respiratory tract infection, the most frequent symptoms are: cough, sometimes along with fever, pain of the joints and muscles, vomiting and abdominal pain. Subclinical form is not manifested by any symptoms, but it causes dangerous complications. In the described case, medical history suggests immune disorder to be the cause of coronary arteritis. Another autoimmune disease that occurs mainly in young adults is Takayasu's disease. The chronic inflammatory process affects mainly the aorta and its main branches but may also occur coronary vessels [3, 4]. Complication of the disease include ischemia but rarely applies to patients under 18 years [3, 4, 5].

Another group of vasculitis diseases includes arteritis in course of local and systemic infections of bacterial or viral origin. Nowadays, infectious diseases, no matter if mild or severe, are considered to be a possible cause of ischemic heart disease and sudden cardiac

death [6]. This problem concerns especially immunocompromised patients with concomitant diabetes, haematological diseases and chronic dialysis [7]. The more frequent occurrence of inflammatory state, the more severe and spread the atherosclerotic lesions within arteries in the heart, lower limbs and neck [8, 9]. There are studies which present the role of inflammation markers ischemic heart disease (for instance Interleukin 6 concentration is useful in estimating probability of sudden cardiac death) [10]. Fibrinogen and C-reactive protein are also believed to play an important role in the pathogenesis and course of ischemic heart disease [8, 10, 11]. Similar prognostic role may be applied to many acute phase indicators, such as number of leucocytes [8, 10, 12]. The most common pathogens causing accelerating the atherosclerotic process and inducing acute cardiovascular events are: Chlamydia pneumoniae, Cytomegalovirus, Herpes simplex (types 1 and 2), Helicobacter pylori and Hepatitis A virus. Recently, Chlamydia pneumoniae is an object of particular interest. This common pathogen is responsible for rhinitis, pharyngitis, bronchitis, atypical pneumonia and it has also been found in atherosclerotic lesions [5, 8, 13]. What is more, high level of antibodies against Chlamydia pneumoniae was found in patients suffering from ischemic heart disease [8, 14].

In young patients not only infectious diseases, but also the presence of muscular bridge must be taken into consideration [15]. Significant ischemic states are not frequent in these patients [16]. In many cases muscular bridges are not considered to disturb the coronary flow, as most of it takes place in the end-diastolic phase. However, ischemic state may occur in case of increased metabolism of the heart caused by physical exertion, stress, fever, anemia or dysrhythmia [17,10]. Significant coronary events in the form of acute coronary syndromes in patients with muscular bridges are not common [17, 10]. However this state might be manifested by unstable ischemic heart disease, myocardial infarction and sudden cardiac death [17, 18, 19, 20].

### **Conclusion**

Inflammatory process should always be considered as a cause of angina pectoris, especially in young patients. Abnormalities within the structure of coronary arteries disturbing the blood flow and autoimmune vasculitis, including the coronary arteries should also be taken into consideration. Patients who presented acute coronary syndrome must be under constant cardiologic care, as the possible complications include dysrhythmia and chronic heart failure.

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